

SWARMING OF THE WESTERN HARVESTER ANT,  
*POGONOMYRMEX OCCIDENTALIS*

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ABSTRACT.— The swarming and mating of harvester ants was observed in Utah in July 1979. Workers groom the alate forms outside the mound before swarming occurs and are highly aggressive in protecting them. Mating pairs apparently are not disturbed by other ants. Fertile females likely use moving vehicles that extend their dispersal.

Few detailed accounts of the swarming activities of harvester ants are existent in the literature. Wheeler (1910) reported the swarming of harvester ants in the desert along the Colorado River. Michener (1942, 1948) noted swarming and mating of *Pogonomyrmex californicus* and *P. barbatus*. Strandmann (1942) recorded the mating activities of *P. comanche*, and Chapman (1957) reported elevational swarming of *P. occidentalis* on mountain tops in five states.

During the latter part of June and all of July in 1979, I traveled extensively over Utah collecting ants. In most cases when harvester ants were taken, I partially excavated each mound from which I collected to determine the presence of immature and winged forms. Although winged males and females were present in the majority of the mounds during this period, swarming was not seen until the latter part of July.

On July 23 I stopped at about 11:30 a.m. (Mountain Daylight Time) to collect from an area of abundant, large mounds one mile west of Elberta, Utah County, Utah, alongside highway US6 at an elevation of 5400 ft in a sagebrush-rabbitbrush habitat (*Artemisia tridentata*-*Chrysothamnus nauseosus*). As I approached a large mound on that warm, sunny day, an area of one-half square foot around two enlarged, south-facing openings was literally red with a mixture of workers, winged males and females. I would have had difficulty finding an open space within the mass of ants where I could have touched the

ground with a pencil. The winged forms were relatively inactive, none in flight, and the workers seemed to be grooming and attending them. As I approached the mound to aspirate a sample of ants, the majority of the winged females and some males quickly entered the nest openings. Some of the males, however, remained immobile outside the mound as though mesmerized by the grooming activities of the workers. The workers on the fringe of the mass immediately began aggressive tactics toward me in much more of a frenzied movement than I had heretofore encountered with workers when winged forms were not outside the nest.

After I had taken my sample, I returned to the car to record the data. Five minutes later I again visited the mound to see if the winged forms had left the burrow. The air was filled with flying ants. At the mound the workers were no longer congregated around the openings, but were scurrying around, near, and over the mound. A few winged forms were crawling around on the mound. I was quickly deluged with flying ants, and a sting on my leg, presumably from a winged female, stimulated my hasty retreat to the car, where I quickly closed all windows. The outside of the car was soon covered with winged ants that were mating. Females seemed to be much more abundant than males. This was consistent with my findings wherever I had excavated mounds throughout the state during June and July.

In mating, the male mounted the female

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dorsally, clasped her around the thorax with his legs, and bent his abdomen strongly downward to contact her genitalia. She simultaneously bent her abdomen slightly upwards to facilitate contact. Once joined, the partners sometimes assumed different positions than described above, frequently both establishing leg contact with the substrate on which they were resting, although maintaining abdominal junction. Other crawling ants frequently came in contact with a mating pair, but the contact was brief. At no time did I observe other males remaining with mating pairs as described by Strandtmann (1942) for *P. comanche*. Copulation lasted for perhaps 20 to 40 seconds, whereupon the two sexes immediately separated, with the male the first to fly away. No case was observed where either the male or female used its mandibles to grasp or chew on the other as described by Strandtmann (1942) for *P. comanche*, and by Michener (1948) for *P. barbatus*.

About 12:30 p.m., after I had observed the mating activities of numerous pairs and the numbers of ants crawling on the car and flying in the area had considerably diminished, I returned to the mound. Few flying ants remained in the air in its vicinity, but a few winged forms were crawling around the mound. Most of the workers had reentered the entrances, and those that remained outside had apparently resumed their normal, slower speed of routine activity.

I moved to another area of several mounds situated about 25 yards north of the site of my previous observations. The ants of several of these mounds were in various stages of swarming activities. By periodical rotation between these, and with some excavations, I was able to summarize the overall activities associated with swarming of this species.

When the males and females prepare to swarm, the workers enlarge the openings leading from the mounds, the winged ants

and many workers leave the nest and congregate around its openings. The winged males and females are attended by myriads of workers who groom them as their bodies warm in the sun, and at the same time act in a protective capacity in relation to any would-be predators. Once the mating flight begins, the workers disperse and crawl around the mound for a few minutes, then reenter the burrow. Normal worker activity outside the mound is resumed within a few minutes after the majority of the winged forms have departed. A few winged forms seem to linger around the mound, apparently hesitant to leave. Some also delay leaving the burrow to assume their flight of destiny. Swarming males and females seek some high point to mate, but many pairs mate on the ground.

After mating, females migrate in all directions to locate sites for establishing new colonies. Undoubtedly some of them hitch rides on moving conveyances such as cars, trucks, and trains. When I arrived at my home in Provo, 30 miles from and several hours after observing the swarming activity, a live winged female dropped from my car onto the driveway and crawled into the vegetation. Such methods of conveyance likely extend the dispersal of females over relatively great distances.

#### LITERATURE CITED

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